

## 19.0 OTHER ADVERSE NON-CANCER HEALTH OUTCOMES

### STATEMENT TO THE PUBLIC

#### *Depression and Electrical Sensitivity*

*The reviewers found the evidence linking EMFs with depression and alleged electrical sensitivity to be "inadequate" and did not develop a degree of certainty for them different from their priors. This agreed with the assessment of the National Institutes of Environmental Health Sciences workgroup.*

1 The reviewers found that the evidence pertaining to leukemia subtypes, CNS  
2 (except brain), lymphoma, cardiovascular disease (except acute myocardial  
3 infarction), and motor neuron disorders (other than ALS) was inadequate to carry  
4 out an evaluation. They also agreed with the NIEHS (1998) that the available  
5 evidence pertaining to depression and electrical sensitivity was "inadequate" to  
6 implicate electric or magnetic fields as causative agents. However, having the  
7 benefit of additional recent literature, the reviewers are in a position to offer a few  
8 caveats pertaining to these two endpoints

9 **Depression:** Ahlbom (Ahlbom, 2001) reviewed the literature related to depression,  
10 including the studies of Dowson (Dowson, 1988), Perry (Perry, Pearl & Binns,  
11 1989), Poole (Poole et al., 1993), Savitz (Savitz et al., 1994), McMahan (McMahan  
12 et al., 1994), and Verkasalo (Verkasalo et al., 1997). Ahlbom concluded that the  
13 literature was inconsistent with Poole (Poole et al., 1993) (positive), and McMahan  
14 (McMahan et al., 1994) and Savitz (Savitz et al., 1994) (primarily null). He did not  
15 review the Beale (Beale, 1998) study, which came out after he had completed his  
16 review. Beale shows some relation between mood scales and magnetic field  
17 exposure to transmission lines. The reviewers remain close to their prior degree of  
18 certainty with regard to depression but believe that this is an area worthy of further  
19 study, particularly since it may shed mechanistic light on the EMF/suicide  
20 association.

21 **Electrical Sensitivity:** The reviewers conducted a study, as part of the California  
22 Department of Health Services routine random-digit-dial survey, to assess the  
23 prevalence of people who believe that they are unusually allergic or sensitive to  
24 electrical appliances or power lines. About 3% of 2,000 respondents alleged this  
25 sensitivity (see Appendix 3). A review of the literature (see Appendix 4), which

26 includes a number of double-blind challenges of allegedly sensitive subjects, did not  
27 suggest that magnetic field exposure was responsible for the symptoms. There are  
28 some reports from the old Soviet Union of increased rates of symptomatic  
29 complaints in utility workers (Jerabek & et al., 1979), (Asanova & Rakov, 1975) and  
30 health complaints have been related to climactic and air ionization changes (Gad  
31 Sulman, 1980). Other aspects of the EMF mixture, such as contact currents, have  
32 not been systematically evaluated. If these complaints were to be linked causally to  
33 exposure to some part of the EMF mixture, one would need to ask how the  
34 pathophysiology of this syndrome was related to the pathophysiology of conditions  
35 like the leukemias, adult brain cancer, ALS, or miscarriage, which the authors of this  
36 document were inclined to believe to be linked to EMF exposure. The belief in  
37 electrical sensitivity led to changing jobs in 0.5% of Californians polled. Judging by  
38 anecdotal reports, an additional unknown number of people suffer from severe  
39 debilitating symptoms that they believe to be triggered by being close to appliances,  
40 power lines and the like. So this syndrome is impacting peoples' lives regardless of  
41 its etiology and requires further study. The null double-blind exposure studies have  
42 been criticized for not objectively selecting subjects or following their reactions long  
43 enough. If subjects could be found who reliably developed symptoms or  
44 physiological changes from EMF exposures that challenged biophysical  
45 assumptions under double-blind conditions, this would have implications for the  
46 interpretation of the literature pertaining to other health endpoints. Nonetheless the  
47 reviewers remain at their prior degree of certainty with regard to EMF and this self-  
48 defined syndrome.